

## **SURFACE IMPROVEMENT OF MACHINE ELEMENT COMPONENT**

## **SURFACE IMPROVEMENT OF MACHINE ELEMENT COMPONENT**

Patent Number: JP2000218445  
Publication date: 2000-08-08  
Inventor(s): HIROSE SHINGO;; MORI KAZUO  
Applicant(s): AGENCY OF IND SCIENCE & TECHNOL  
Requested Patent: ☐ JP2000218445  
Application Number: JP19990026143 19990203  
Priority Number(s):  
IPC Classification: B23P6/00; B01J19/00; C23C16/04; C23C16/34; H03K5/13  
EC Classification:  
EC Classification:  
Equivalents: JP2995300B2

### **Abstract**

**PROBLEM TO BE SOLVED:** To improve the surface defect by intermittently feeding the vapour phase material into a reaction chamber under a condition to minimize the growth of crystal on a reference surface, after placing a machine element component in a specific reaction chamber, and executing an atomic layer growing process to the machine element component.

**SOLUTION:** A tool (machine element component) 10 comprises a spiral projection part 12 on an outer peripheral surface of a cylindrical base 11. The tool 10 is installed inside of a reaction pipe 20, and the vapour phase material is fed to a reaction chamber 21 in pulse sequence. On this occasion, a condition to minimize the growth of crystal on a reference surface as a repair target surface, is selected. As the vapour phase material, for example, organic titanium metal and hydroxide of nitrogen (ammonia) are alternately fed in pulse sequence. By feeding the vapour phase material into the reaction pipe 20 under this condition, the growing of crystal in a zone except for the reference surface, is mainly executed on the projection part 12 by the atomic layer growing method, and the tool 10 can be repaired without increasing the unevenness existing on the surface.